NATO ISR Interoperability Architecture (NIIA) and STANAG 4545 Update

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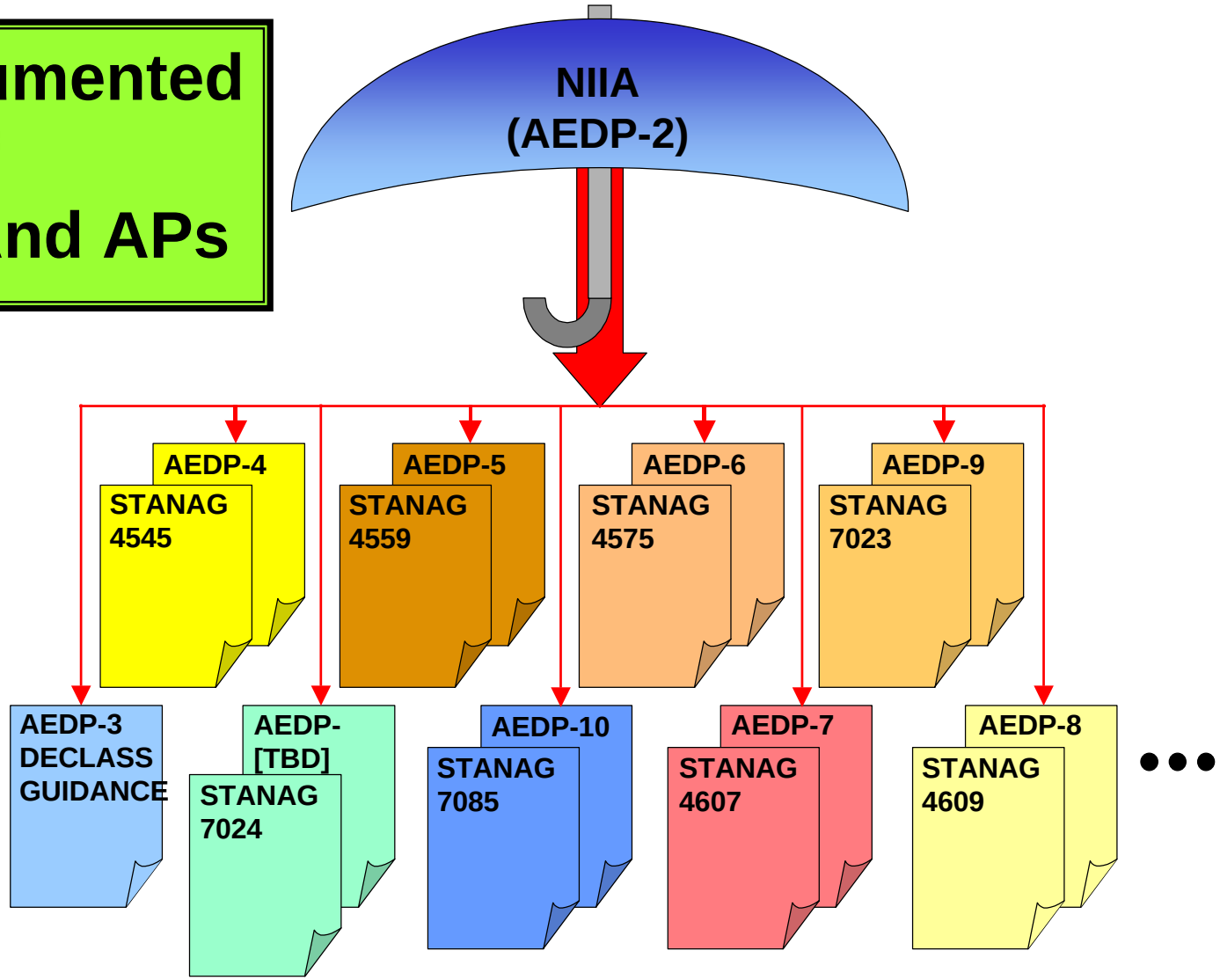
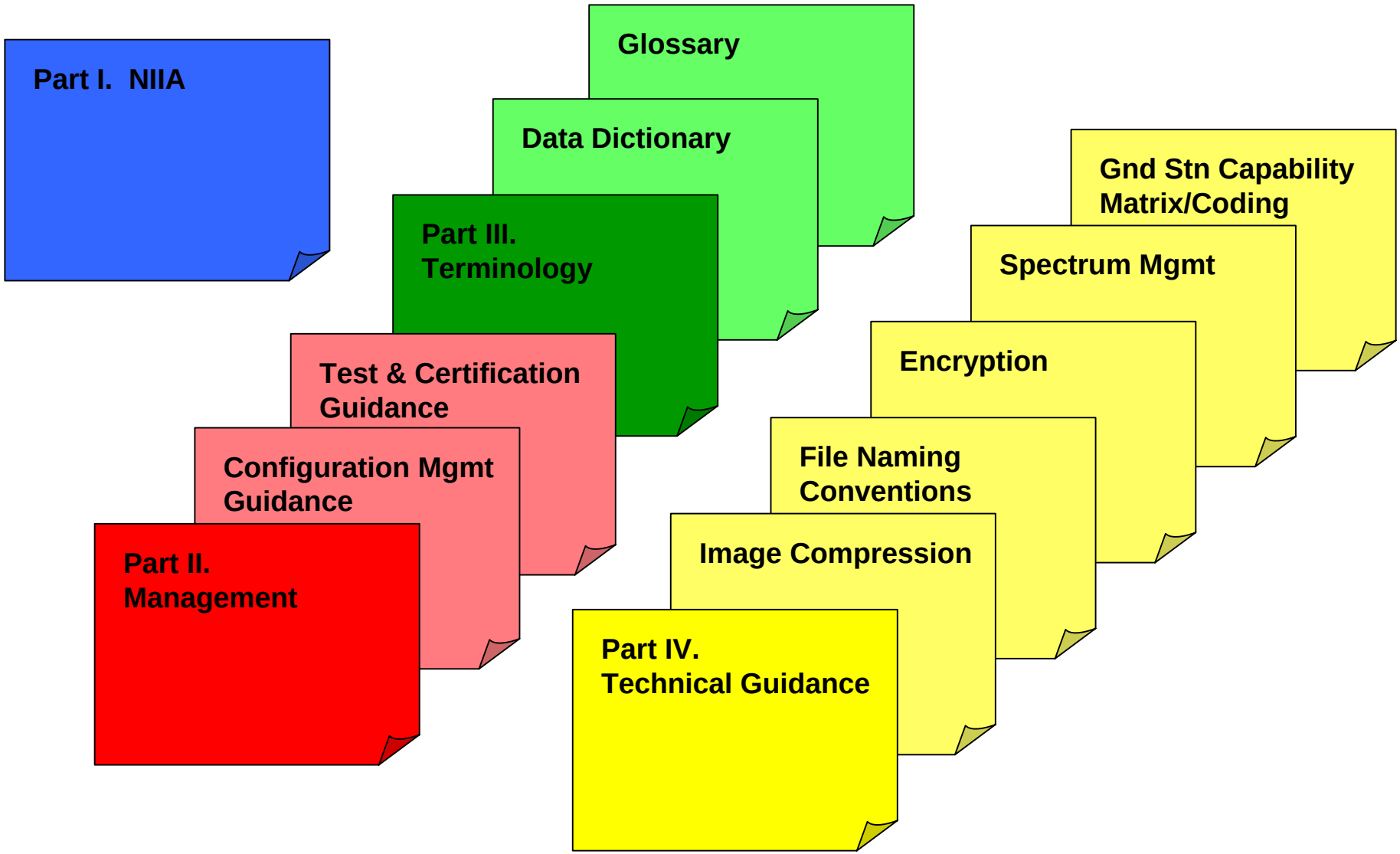
June 2004

NIIA Documentation

NIIA Is Documented In Family Of STANAGs And APs



NIIA (AEDP-2) Structure



NIIA STANAGs

- **Data Format Standards**
  - STANAG 4545, NATO Secondary Image Format
    - NITF 2.1
  - STANAG 4607, NATO GMTI Format
    - Common GMTI Format
  - STANAG 4609, NATO Motion Imagery Format
    - NIMA Motion Imagery Standard Profile 2.0A
  - STANAG 7023, NATO Primary Imagery Format
    - Streaming Real Time Imagery
    - Not Used In US, Yet
- **Recorder Standards**
  - STANAG 7024, ISR Wideband Tape Recorders
    - DCRsi & ID-1 Tape Recorders
  - STANAG 4575, NATO Advanced Data Storage Interface
- **Library Standard**
  - STANAG 4559, NATO Standard Imagery Library Interface
    - NIMA Geospatial And Imagery Access Services (GIAS)
- **Data Link Standard**
  - STANAG 7085, NATO Wideband ISR Data Links
    - Common Data Link (CDL)

Interoperability Not Based Just on Standards Adoption - Interoperability Depends on Test and Certification of Adopted Standards AND Implementation In National Systems

NIIA Status

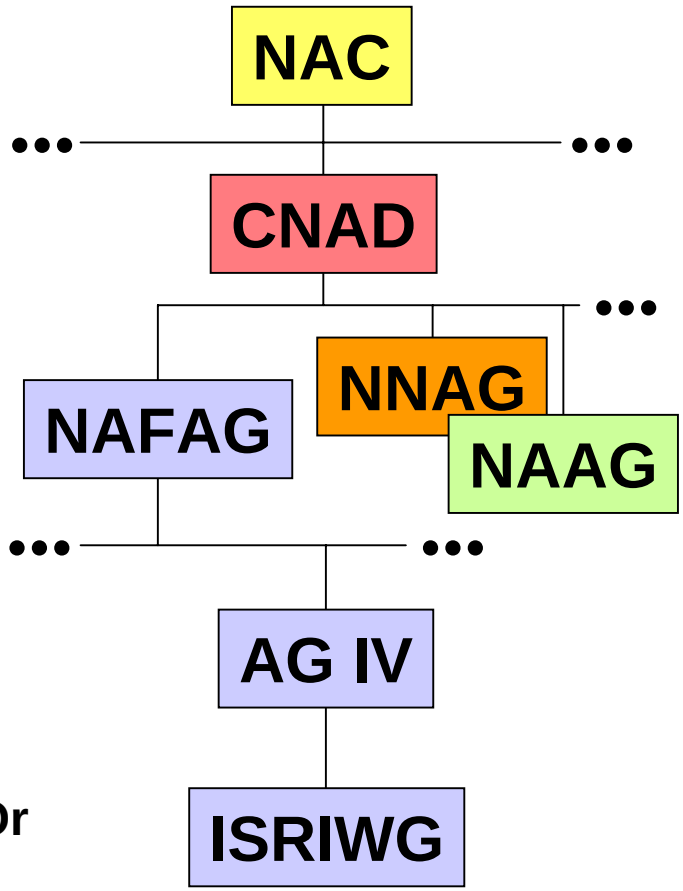
- **NIIA Document (AEDP-2) Completed And In Final Review**
  - **Will Be Approved At ISRIWG Management Team Meeting In Brussels 29-30 June**
  - **Then Forwarded To National AG IV Reps For Approval Under 30-Day Silence Procedures**
  - **Expect To Be Formally Published (Promulgated) As AEDP-2 By End Of Calendar Year 2004**
- **Scope Of NIIA Includes All Of ISR, Not Just Imagery**
  - **Added Initial Inputs On ELINT**
  - **Will Be Evaluating More SIGINT Inputs From EE AHWG**
  - **Considering Other INTs, Including HUMINT**

NIIA Adoption

- **Architecture Approved By Numerous NATO Organizations**
  - **UAV Community**
  - **NSA/ARP**
  - **NC3B**
    - **Incorporated Into NATO C3 Technical Architecture**
- **Being Adopted By AGS3 And NC3A For NATO-Wide ISR Architecture**
  - **AGS Program Is Continuing To Receive High Level Attention**
- **Numerous Nations Also Adopting NIIA For Respective National Architecture**
- **Key To Future Interoperability Is Incorporation Of Applicable Standards Into National Systems**

NIIA High Level Attention

- **Conference Of National Armaments Directors Has Endorsed NIIA As NATO's ISR Architecture**
- **CNAD Established New AHWG On Jointness**
  - **Directed That Joint ISR Be Considered For New Subgroup Under CNAD**
  - **Working To Incorporate NIIA Into Joint ISR WG Planning**
- **CNAD Will Host ISR Day At 28-29 Oct Meeting**
  - **Inviting Industry To Provide Displays And/Or Presentations**



NIIA Demonstrations

- **CNAD And NAFAG Focusing On Demonstrating Benefit Of Architecture In Operational Environment**
- **Two Levels Of Demonstrations**
  - **Developmental Tests (Validation And Certification) Will Be Managed By AG IV, Custodians, And ISRIWG**
  - **Operational Tests Will Be Managed At NAFAG Level**
- **Expect To Have Major Demonstrations Each Year**
  - **Empire Challenge ‘04 Is Limited Demonstration Of Cross Processing Of Sensor Imagery With UK And Australia**
  - **Trial Hammer ‘05 Will Demonstrate SIGINT Support To Time Critical Targeting/SEAD**
  - **Trial Quest ‘06 Will Be Broader Demonstration Of NIIA Interoperability In Major Exercise**

MH TST

- First Meeting Held In Hastings UK On 6 February 2004
  - Next Meeting Is 19 July 04 In Colorado Springs CO
- Team Will Provide Inputs To ISO 19115-2 On Behalf Of NATO And Member Nations
  - Develop STANAG Supplement If Required
- Work To Be Applicable To Entire ISR Data Flow
  - Tasking To Collection To Exploitation To User
  - All Types Of ISR Data - IMINT, ELINT, COMINT, MASINT, Etc
- Likely To Follow ISO Lead Using XML/UML For Definitions
- Will Continue To Follow Developments In Multi-Data Type “Wrappers” In Separate Group

STANAG 4545

- **NATO Secondary Image Format (NSIF)**
  - **Virtually Identical To U.S. NITF**
  - **Currently At Edition 1, Amendment 1**
  - **Adding Approved Changes With Errata Sheets Posted On NATO Web *[www.nato.int/structur/AC/224/ag4/4545/4545.htm]***
- **NSIF CST Reviewing NITF Change Proposals To Maintain Consistency - Last Meeting 5 Feb 04 - Next 23 Jul In CO**
- **Way Ahead Is To Migrate To Profile Of ISO Standard, Basic Image Interchange Format (BIIF)**
  - **Profile Defines Specific Implementation Of BIIF To Meet STANAG 4545 Rqmts**
  - **Will Update Profile To Include Recent Changes**
  - **Reissue STANAG 4545 As Edition 2, Which Points To Profile**
- **J2K And CGM Profiles Approved By 4545 CST**
  - **Submitted By NATO (UK For The 4545 CST)**
  - **Need To Identify CM Process For These And Other “Shared” Documents**

STANAG 4545 CST

- **Examining Additional Capabilities Required In Next Edition**
  - **New Sensor Configurations (e.g. More Capabilities, GMTI)**
  - **New Extensions**
  - **EXIF Conversions**
- **Developing AEDP-4 As Implementation Guide For NSIF Community**
  - **STANAG Implementation Guidance**
  - **Sample Implementation**
  - **NSIF Test Criteria**
  - **Approved Extensions For Use In NATO - Subset Of STDI-0002 And DIGEST**
  - **STANAG 4545/AEDP-4 Configuration Management Plan**
- **Implementation Guidance For Extensions Provided On NATO Web**

NITF RFC Status In NATO - 1

RFC NTB-001	Image Data Mask & IMODE Values	*In Errata Sheet*
RFC NTB-002	Correction to Attach Level Description	*In Errata Sheet*
RFC NTB-003	Corrections to CLEVEL Table	*In Errata Sheet*
RFC NTB-004	Addition of CLEVEL 09	*Next Errata Sheet*
RFC NTB-005	Large Block Option	*In Errata Sheet*

In Errata Sheet	Approved	Not Approved	Under Review

NITF RFC Status In NATO - 2

RFC NTB-006	Handling Unknown Date/Time Values*1	*Next Errata Sheet*
RFC NTB-007	Spectral Data Single Band	*JITC To Delete Prop*
RFC NTB-008	Spectral Data Single Pixel Array	*Next Errata Sheet*
RFC NTB-009	J2K Document Refs	*Next Errata Sheet (Combined In 1 RFC)*
RFC NTB-010	J2K COMRAT, IREP, IMODE	
RFC NTB-011	J2K NBPP, PVTYPE	
RFC NTB-012	J2K CLEVEL Constraints	

Note 1: Recommended changing seconds range to 0-60 to allow for leap seconds.

In Errata Sheet	Approved	Not Approved	Under Review

NITF RFC Status In NATO - 3

RFC NTB-013	**ISUBCATn Field Labels for Spectral Data**	***JITC To Delete Prop***
RFC NTB-014	**Misc Admin/Editorial Corrections**	***Next Errata Sheet***
RFC NTB-015	**Many-to-One TRE-OVERFLOW DES**	***JITC To Delete Prop***
RFC NTB-016	**RGB with Greater Than 8-bpp/band**	***Next Errata Sheet***
RFC NTB-017	**More DESs At Higher CLEVELs**	***Being Considered***

In Errata Sheet	Approved	Not Approved	Under Review

NITF RFC Status In NATO - 4

RFC NTB-018	Add Masking For Elev & Location Grids	*Being Considered*
RFC NTB-019	CLEVEL Table For Vectors/Polar Coords	*Being Considered*
RFC NTB-020	Make BILEVEL Comp Optional	*Next Errata Sheet*
[TBD]	Define Country Codes As Examples *2	*Being Considered*
[TBD]	Allow SI Values For SAR And SARIQ *2	*Being Considered*

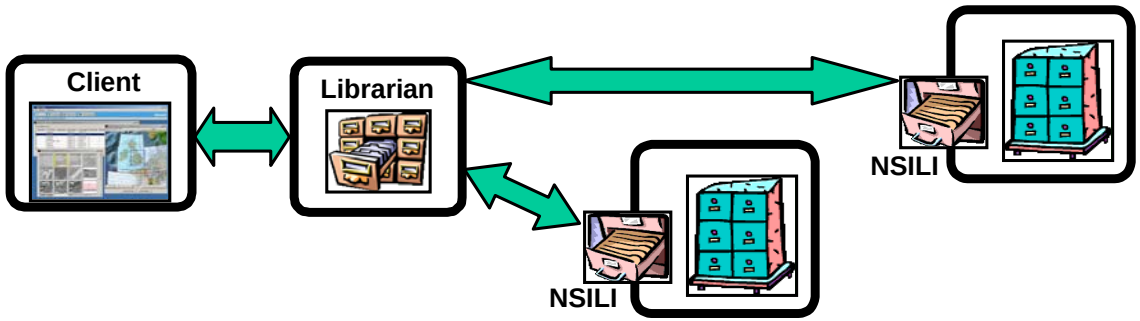
Note 2: 4545 AST Will Prepare Equivalent RFCs For 2500B/NITF.

In Errata Sheet	Approved	Not Approved	Under Review

NIIA Conclusions

- **NIIA Applies Across The ISR Board**
  - **To Both Article 5 And Non-Article 5 Operations**
  - **To All Sources Of Intelligence, Surveillance, And Reconnaissance (ISR) Data (IMINT, SIGINT, MASINT, Etc.)**
  - **To Both Manned And Unmanned Platforms**
- **NIIA Is Documented In Family Of STANAGs And APs**
- **New Work Item Focuses On Developing Common Metadata Definitions For ISR Data**
- **Continuing To Coordinate With NITF Changes**
- **Any Questions?**

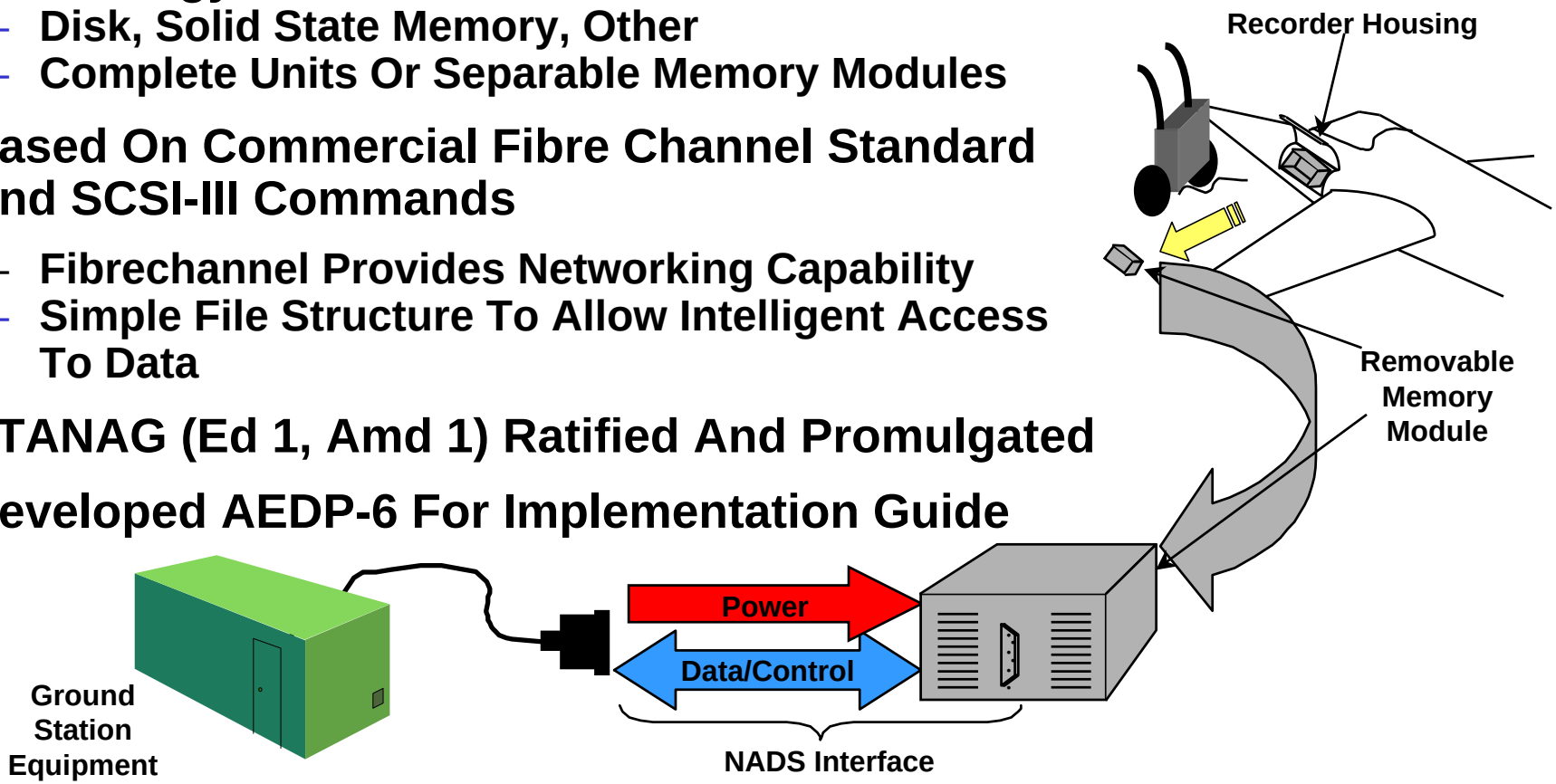
STANAG 4559



- **NATO Standard Image Library Interface (NSILI)**
  - **Based On Subset Of U.S. GIAS Standard**
  - **Provides The Client/Server Connectivity For Multiple Library Searches For NSIF/NITF Images**
- **Current Tasks Include Expansion Of Capabilities**
  - **Add Library Write Capabilities**
  - **Add Multiple Data Types**
  - **Migrate Toward Web-Based Browser Access**
- **Developing AEDP-5 As Implementation Guide**

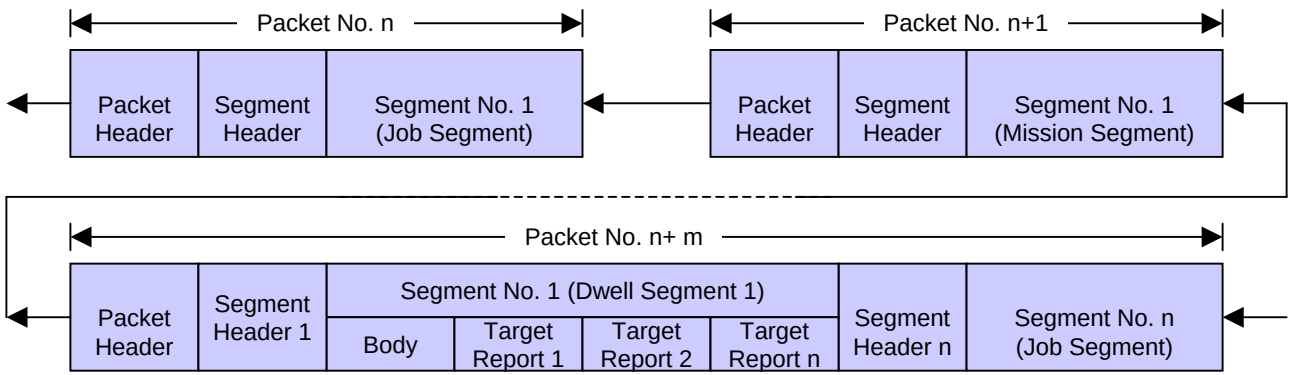
STANAG 4575

- NATO Advanced Data Storage Interface (NADSI)
- Provides Interface Between Any Recorder Technology And Ground Stations
  - Disk, Solid State Memory, Other
  - Complete Units Or Separable Memory Modules
- Based On Commercial Fibre Channel Standard And SCSI-III Commands
  - Fibrechannel Provides Networking Capability
  - Simple File Structure To Allow Intelligent Access To Data
- STANAG (Ed 1, Amd 1) Ratified And Promulgated
- Developed AEDP-6 For Implementation Guide



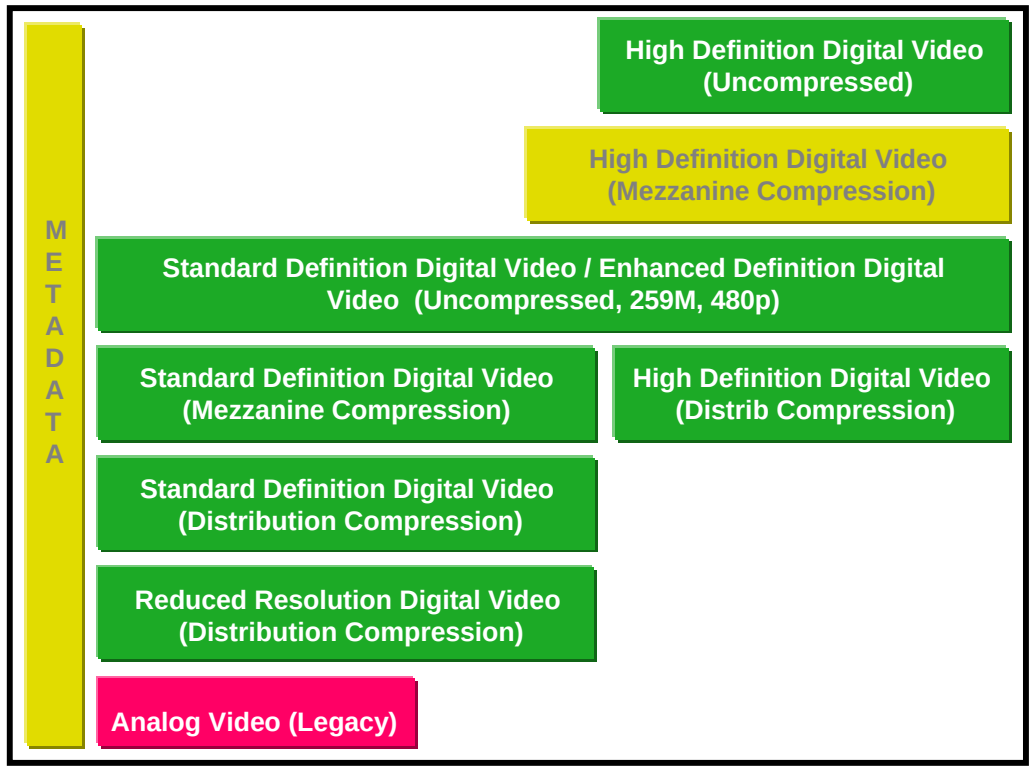
STANAG 4607

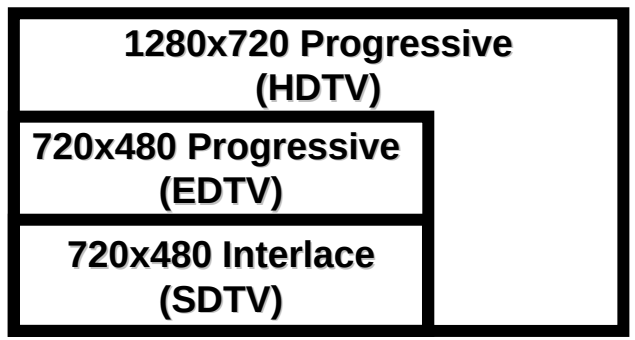
- NATO Ground Moving Target Indicator Format (GMTI)
- Provides Scalable Format For Transmission Of GMTI Data
  - Low Bandwidth To Wideband Systems
  - Simple GMTI “Hits” To HRR
- STANAG Is Ratified - Expect Promulgation By End Of Calendar Year 2004
- Continuing To Review Additional Capabilities
  - SBR, Tracks, Additional Flexibility, Encapsulation In 4545 And 7023
- Developing AEDP-7 As Implementation Guide



STANAG 4609

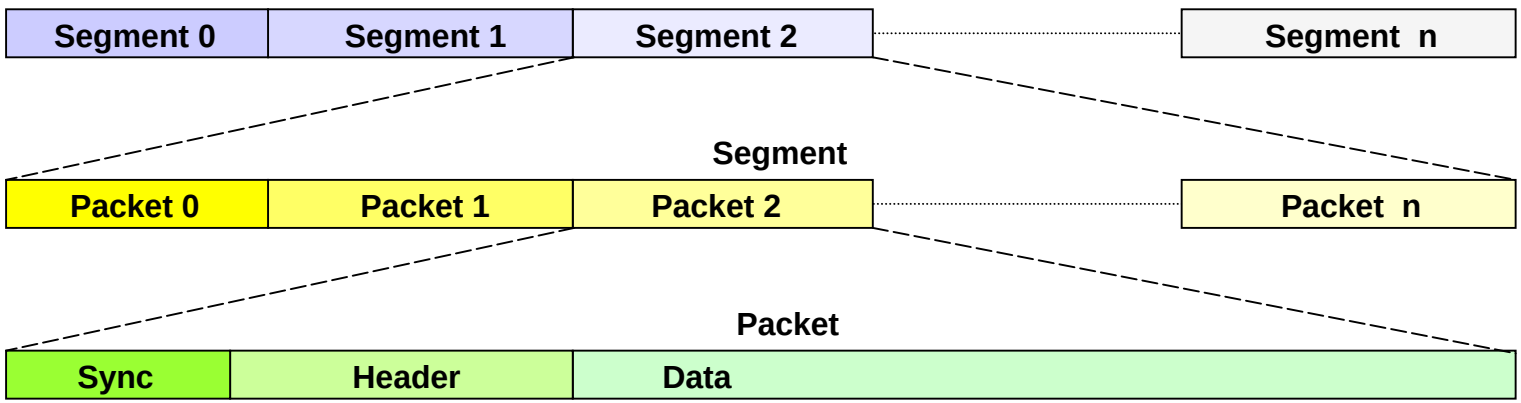
- NATO Digital Motion Imagery Format
- Defines MPEG-2 Transport Stream And Components As Standard For NATO
- STANAG Is In Initial Ratification Process
  - Expect Ratification By End Of 2004
- Current Tasks Include Development Of AEDP-8 As Implementation Guide





STANAG 7023

- NATO Primary Image Format (NPIF)
- Self-Describing Format Intended For Real Time Streaming ISR Data
  - Edition 2 Is Ratified And Promulgated
  - Edition 3 Is Ratified And In Promulgation Process
- Current Work Includes Adding More Capability
- Developing AEDP-9 As Implementation Guide

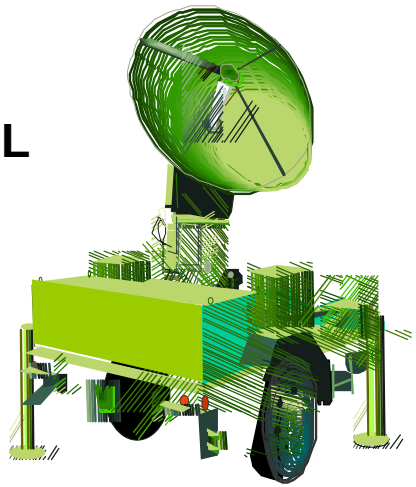


STANAG 7024

- NATO ISR Tape Recorder Standard
- Defines S-VHS, DCRsi, and ANSI ID-1 As Recording Standards
- Standard Is Mature - Formats In Wide Use
- Expect ISR Systems To Migrate Away From Tape Systems Due To Performance/Cost Issues
- Custodian Developing Guide For Handling And Storage Of Magnetic Tapes
  - Mishandling Of Media Has Resulted In Lost Mission Data

STANAG 7085

- **NATO Wideband ISR Data Link Standard**
- **Contains Analog And Digital Links**
  - **Analog Link Not Currently Used**
  - **Current Digital Link Is Compatible With U.S. CDL**
  - **Placeholder For Broadcast Link**
- **Custodian Rewriting Standard**
  - **U.S. CDL**
  - **DVB-S For Low Cost Applications**



- **Developing Set Of Profiles To Reduce Number Of Combinations Of The Parameters Of CDL**
- **Developing AEDP-10 As Implementation And Test/Certification Guide**